



THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of)
Joerg Rheims, al.) Group:
Serial No.: 10/672,817)
Filed: September 26, 2003)
Title: METHOD FOR FIBER STOCK)
PREPARATION) Examiner:

RESPONSE TO DECISION REFUSING STATUS UNDER 37 C.F.R. 1.47(a)

Commissioner for Patents
Washington, D.C. 20231

Sir:

Responsive to the Decision dated June 3, 2004, having a period for response set to expire on August 3, 2004, which period has been extended by the enclosed Petition for Extension of Time to expire on December 3, 2004, Petitioner submits the following.

The Decision Refusing Status under 37 C.F.R. § 1.47(a), mailed on June 3, 2004, indicated that the petition failed to provide:

1. Proof that the non-signing inventor cannot be reached or refuses to sign the Oath or Declaration after having been presented with the application papers (specification, claims and drawings); and
2. An acceptable Oath of Declaration in compliance with 37 C.F.R. § 1.63.

Responsive thereto, Petitioner states the following pertinent facts:

1. Mr. Oliver Heise was presented with a copy of the Application papers in the corresponding German procedure, namely German Priority Application 101 15 421.6. A copy of the letter forwarding the German application is attached hereto.
2. The above U.S. '817 application was filed as a continuation of the international application claiming priority to the German 101 15 421.6 application.

3. The German Priority Application, the International Application and the U.S. '817 application are all substantially identical to each other, except for formalities corresponding to the different procedures.

4. As a follow up, the undersigned also sent another copy of the application as filed in the U.S. Patent Office to Oliver Heise on October 6, 2004. A copy of the cover letter and application are attached hereto.

5. On Tuesday, November 2, 2004, the undersigned received a telephone call from the Attorney for Oliver Heise. He indicated that Oliver Heise would not sign any of the necessary papers corresponding to the above-application unless a rather exorbitant fee was paid (which is not disclosed herein as not being pertinent).

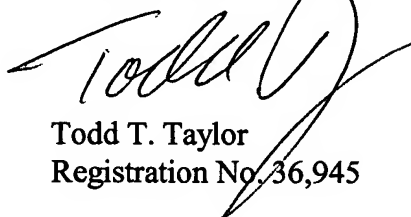
6. It is therefore apparent from the foregoing facts that Oliver Heise has been presented with a copy of the application papers as filed, and that he has no intention of executing the necessary documents for filing with the U.S. Patent Office.

7. A Declaration in compliance with 37 C.F.R. § 1.63 signed by all of the named inventors except for Oliver Heise is enclosed herewith. The address for inventor Werner Witek has been corrected on the original Declaration attached herewith.

In the event Petitioners have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Petitioners hereby conditionally petition therefor and authorize that any charges be made to Deposit Account No. 20-0095,
TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,



Todd T. Taylor
Registration No. 36,945

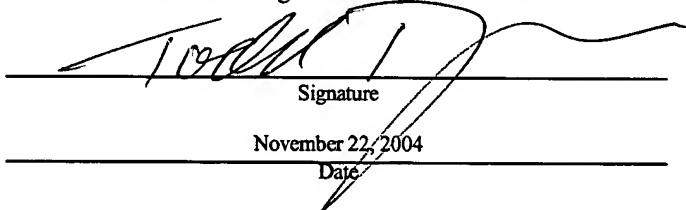
Attorney for Applicant

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450,
on: November 22, 2004

Todd T. Taylor, Reg. No. 36,945

Name of Registered Representative



Signature

November 22, 2004

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TTT/dc

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Application
Declaration

VOITH PAPER

Voith Paper
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27. März 2001

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Dr. Rheims per Hauspost!

Kennwort: FL-Mahlenergie

Ihre Akte:

Unsere Akte: PP11232

Sehr geehrte Erfinder,

beiliegend erhalten Sie den Entwurf des Patentanwalts über die o. g.
Erfindung. Bitte um Korrekturen und Ergänzungen, falls notwendig.

Meinen Kommentar finden Sie in dem Entwurf selbst.

Diese Erfindung kann extrem wichtig werden. Ich bitte daher um schnelle
Antwort, damit das Patent umgehend beim Deutschen Patentamt
eingereicht werden kann.

Mit freundlichen Grüßen / Best Regards



Helmut Heinzmann

Patentstrategie pjs

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October 6, 2004

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RE: U.S. Patent Application Serial No. 10/672,817
Title: METHOD FOR FIBER STOCK PREPARATION
Our Ref.: VOI0276.US
Your Ref.: PP 11232 WOUS

Dear Mr. Heise,

You have been contacted numerous times in the above-identified case to sign and return the declaration and assignment. On August 10, 2004, I spoke with your wife via telephone and she informed me that since you no longer work for Voith and there is a dispute over vacation pay, you refuse to sign the application.

On May 15, 1993, you signed an "Employee Invention Assignment and Secrecy Agreement" legally obligating you to sign all necessary papers for proceeding with a patent on which you are a named inventor. You were sent a copy of the corresponding German application for review on March 27, 2001. The letter and application were in the German language which you speak fluently. The declaration and assignment were sent to you on September 4, 2003; January 12, 2004; and February 19, 2004.

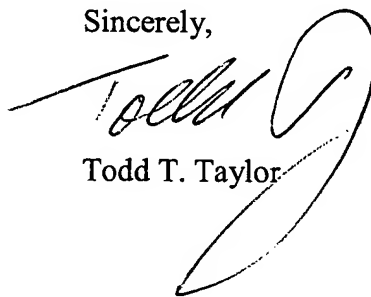
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Mr. Oliver Heise
October 6, 2004
Page 2

I am enclosing one last time a copy of the application, declaration and assignment. Please again review the application, sign and date the declaration where indicated, sign, date and notarize the assignment where indicated, and return to me for receipt by Nov. 1, 2004. We understand that you may have a dispute with the accounting department concerning vacation pay, but we must protect our legal rights and demand that you return the executed documents.

Sincerely,

A handwritten signature in black ink, appearing to read "Todd T. Taylor", with a large, stylized flourish extending from the end of the signature.

Todd T. Taylor

Enc: Application
Declaration
Assignment

METHOD FOR FIBER STOCK PREPARATION

BACKGROUND OF THE INVENTION

This is a continuation of prior PCT application No. PCT/EP02/01621, entitled
5 "METHOD FOR PREPARING FIBROUS MATERIAL", filed February 15, 2002 .

1. Field of the invention.

The present invention relates to a method for the preparation of fiber stock, for the
production of paper or cardboard.

2. Description of the related art.

10 Fiber stock, for the production of paper and carton cardboard, is processed in the stock
preparation that is located prior to the paper machine so that the desired attributes, such as, for
example, mechanical characteristics, optical characteristics, etc., are achieved. Especially the
mechanical characteristics including consistency characteristics are influenced by the so-called
freeness of the fiber stock suspension. This freeness is an indicator as to how easily the fiber
15 stock suspension can be dewatered. A certain level of freeness can be achieved by more or less
intensive refining of the fibers in so-called refiners. This involves the fibers being shortened,
fibrillated and crushed. This process renders the fibers flexible and increases their specific
surface, so that the number of possible bonding points between the fibers is increased during
sheet formation. This leads to an increase of the mechanical strength of the paper or carton
20 produced from these fibers. The required refining process uses a considerable amount of energy.
Approximately 120 kWhr to 200 kWhr are required per ton of fiber material, depending upon the
type of pulp or fiber, the freeness as well as other refining parameters. The conventional method
is to refine the fiber stock before, or after, the direct addition of the usual fillers, for example,
calcium carbonate, titanium dioxide, etc. The aforementioned high energy volumes are utilized
25 for this.

Loading with a precipitation product, for example a filler, may occur, for example, through a so-called Fiber Loading™ process, as described in US Patent No. 5,223,090. In this type of “Fiber Loading™” process, an additive, especially a filler, is deposited onto the moistened fiber surfaces of the fibrous material. The fibers may be loaded with calcium carbonate. Moreover, calcium oxide and/or calcium hydroxide are added to the moist, disintegrated fibrous material so that at least a part of this associates itself with the water that is contained in the fibrous material. The so treated fibrous material is subsequently treated with carbon dioxide. In the method that is known from US Patent No. 5,223,090, the “Fiber Loading™” process can occur inside a refiner.

It is thus a known procedure to subject the stock or pulp to a loading process with which calcium carbonate is produced. However, it remains an open question as to how this treated stock is to be treated optimally, in other words to be refined, with regard to its mechanical, chemical and physical characteristics. What is needed in the art is a more economic and efficient refining process.

SUMMARY OF THE INVENTION

The present invention provides a method that renders a drastic reduction in the refining energy for fiber stock without negatively impacting the characteristics of the paper that is being produced from these fibers.

This method for the preparation of the fiber stock for the production of paper or cardboard, includes the following steps:

- a) Supplying of fibers in the form of a suspension that has a predetermined solids content,

- b) Loading of the fibers with a precipitation product, without refining the stock,
- c) Refining of the fibers after completion of the loading process, in order to improve the freeness value and/or to alter the fiber characteristics, and
- 5 d) Transportation of the fiber stock suspension in direction of the paper machine.

This method allows the refining energy, required for fiber stock, to be clearly reduced, at the same time maintaining, almost completely, the desired attributes of the paper that is being produced from these fibers.

In process step a) the solids concentration is selected to be in a range of preferably
10 approximately 25% to approximately 40%, particularly in a range of approximately 30% to approximately 40% and preferably in a range of approximately 30% to 35%.

The precipitation product with which the fibers are loaded in process step c) may be a filler. However, in principle other desired precipitation products are also feasible. When loading the fibers with a filler, such as, calcium carbonate (CaCO_3), it can be deposited on the moistened
15 fiber surfaces by adding calcium oxide (CaO) and/or calcium hydroxide (Ca(OH)_2) to the moist fiber material. At least a part of the filler can associate itself with the water of the fibrous material volume. The treated fiber material is then additionally treated with carbon dioxide (CO_2). Further, the created calcium carbonate may form a suspension around and between the fibers. When adding the medium, containing the calcium oxide and/or the calcium hydroxide, to
20 the fiber stock suspension, a chemical reaction with exothermal characteristics occurs. The calcium hydroxide should preferably be added in a liquid form, also known as milk of lime. This means that the water, that is possibly embedded in or added to the fibrous materials of the fiber stock suspension, is not absolutely necessary for the start and development of the chemical reaction.

The term “moistened fiber surfaces” may encompass all moistened surfaces of the individual fibers. This specifically also includes the scenario where the fibers are loaded with calcium carbonate, or any other desired precipitation product, on their outside surfaces as well as on their inside (Lumen). According to this method the fibers are loaded with the filler calcium carbonate, whereby the loading onto the moistened fiber surfaces occurs through a so-called “Fiber Loading™” process, as described in US Patent No. 5,223,090. In this “Fiber Loading™” process the carbon dioxide with the calcium hydroxide reacts to form water and calcium carbonate.

Advantageously, the fibrous suspension is diluted, prior to refining, to a solids concentration, defined as the fiber and precipitation product mass, specific to the total volume, in a range of approximately 3% to approximately 7%, especially in a range of approximately 4% to approximately 6% and preferably in a range of approximately 4.5% to approximately 5.5%. With these low concentration levels during the refining process, known as low consistency refining, optimum mechanical strength values, such as tear or break strength, bursting strength, and tensile strength, of the produced paper web is achieved. This also provides the optimum parameters for the refining of pure pulp, without filler content, in order to achieve high mechanical strengths. The refining process may occur in several steps. The concentration of the fiber stock suspension may differ, or be the same in the various refining steps. In certain instances it is advantageous if partial refining occurs prior to the loading of the fibers with filler. Preferably, at most only half of the total refining energy is utilized for refining prior to the loading process. For papers where only small volumes of precipitation products or filler material are desired, at least a part of the precipitation product can be washed out after refining. The expenditure required for this is compensated for by the energy saving during refining.

Optimum refining conditions can be achieved, especially when the fibers are refined in at least one refiner whose refining slot is defined by structured surfaces, whereby the fibers are refined in the refining slot at a specific edge load of the surface structures. A desired range of the edge load is approximately 0.5 J/m to approximately 5 J/m, particularly in a range of approximately 0.5 J/m to approximately 2 J/m and preferably approximately 1.5 J/m. The specific edge load is an internationally common concept. It results from the division of the net-output (Watt) by the total edge length per second (m/s).

The intersection angles of the surface structures that are formed, preferably by a respective toothed or knife filling, are advantageously in a range of approximately 10° to approximately 80°, particularly in a range of approximately 40° to approximately 60° and preferably approximately 40° for short fibers, and approximately 60° for long fibers.

The present method provides a saving in refining energy of 5% to 70%, and in most cases from 20% to 40%, specific to the pure fiber volume. The strengths, optical characteristics, the porosity and the formation of the produced paper are retained, or even improved as compared to the refining of pulp without filler, or where the filler calcium carbonate was added in the conventional way. The present method advantageously can be utilized in the production of papers having a higher filler content, since the filler no longer needs to be washed out.

In particular, the following process sequences are feasible:

- Partial refining → “Fiber Loading™” (loading with a filler) → complete refining
- Partial refining → “Fiber Loading™” (loading with a filler) and partial refining → complete refining

The partial refining prior to the “Fiber Loading™” process is conducted gently, that is with a lower specific stress to the edge load. This causes the fibers to be fibrillated, making the loading process more efficient.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features and advantages of this invention, and the manner of attaining them, will become more apparent and the invention will be better understood by reference to the following description of embodiments of the invention taken in conjunction
5 with the accompanying drawings, wherein:

Fig. 1 illustrates a segment of a preferred embodiment of a toothed or knife filling in a refiner of the present invention;

Fig. 2 illustrates a segment of another embodiment of a toothed or knife filling in a refiner of the present invention;

10 Fig. 3 illustrates an enlarged section of the toothed or knife filling of Figs. 1 or 2;

Fig. 4 is a purely schematic illustration of a segment of the toothed or knife filling of Figs. 1-3, for the purpose of explanation of the angles; and

Fig. 5 is a schematic illustration of an exemplary embodiment of a refiner that utilizes the toothed or knife filling of Figs. 1-4.

15 Corresponding reference characters indicate corresponding parts throughout the several views. The exemplifications set out herein illustrate one preferred embodiment of the invention, in one form, and such exemplifications are not to be construed as limiting the scope of the invention in any manner.

DETAILED DESCRIPTION OF THE INVENTION

20 The following process steps of the present invention are undertaken in the preparation of fiber stock for the production of paper or cardboard:

- a) Supplying fibers in the form of a suspension with a predetermined solids concentration;

- b) Loading of the fibers with a precipitation product without refining the stock;
 - c) Refining of the fibers after completion of the loading process, in order to improve the freeness value and/or to change the fiber characteristics; and
 - d) Transportation of the fiber stock suspension in direction of the paper machine,
- 5 where additional process steps may occur.

In process step a) the solids concentration is selected to be in a range of approximately 25% to approximately 40%, particularly in a range of approximately 30% to approximately 40% and preferably in a range of approximately 30% to 35%. In process step c) the fibers can be loaded with any desired precipitation product, for example a filler. Prior to refining, the solids
10 concentration, defined as the fiber and precipitation product mass, specific to the total volume, can be diluted to be within a range of approximately 3% to approximately 7%, especially to within a range of approximately 4% to approximately 6% and preferably to within a range of approximately 4.5% to approximately 5.5%. The refining process occurs in one or more steps. The concentration of the fiber stock suspension may vary, or be the same, in the various refining
15 steps. A partial refining prior to loading of the fibers with the precipitation product, which may be a filler, is included in the method. For paper, where only small volumes of precipitation products or filler material are desired, at least a part of the precipitation product can be washed out after refining.

Referring now to the drawings, and more particularly to Figs 1 and 2, there is shown a
20 toothed or knife filling 12. The fibers are refined in at least one refiner whose refining slot is defined by structured surfaces that rotate relative to each other and that are formed by respective toothed or knife fillings 12. Fig. 1 illustrates a segment of a preferred embodiment of a toothed or knife filling 12 of a refiner that is utilized for refining the fibers. Fig. 2 depicts an additional possible variation of such a toothed or knife fillings 12. The fibers are refined in the refining slot

at a specific edge load of the surface structures in a range of approximately 0.5 J/m to approximately 5 J/m, especially in a range of approximately 0.5 J/m to approximately 2 J/m and preferably approximately 1.5 J/m.

Now, additionally referring to Figs. 3 and 4 there is shown intersecting angles of the relating toothed or knife fillings 12, which can be in a range of approximately 10° to approximately 80°, especially in a range of approximately 40° to approximately 60° and preferably approximately 40° for short fibers, and approximately 60° for long fibers. As seen in Fig. 4, this intersecting angle is designated as γ and is defined as:

$$\gamma = \alpha_s + \alpha_R$$

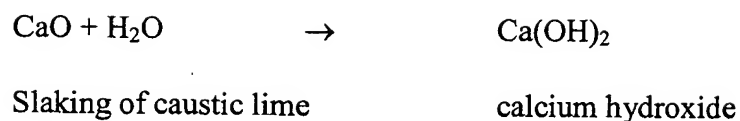
where α_s = knife (bar) angle at the stator

α_R = knife (bar) angle at the rotor or

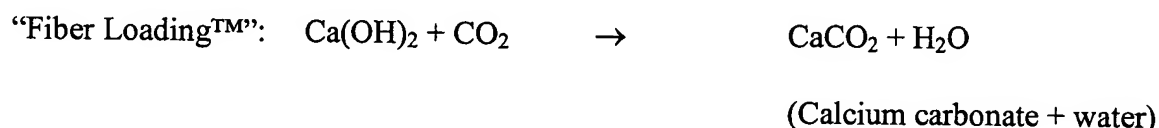
$$\gamma = 2 \times \alpha, \text{ for } \alpha_s = \alpha_R$$

The knife (bar) width b of the preferred knife filling 12 illustrated in Fig. 1 equals 3 mm and the intersecting angle γ is 60°. The groove width g is 4 mm. Knife (bar) width b of knife filling 12 illustrated in Fig. 2 is 2 mm and intersecting angle γ is 40°. Groove width g in this instance is 3 mm. In addition to segment angle θ , sector angle β and the tooth or knife angle (bar angle) α can be seen in Fig. 4.

In another embodiment of the present invention, the fiber material is loaded, for example, with calcium carbonate which is a filler. Particularly, calcium oxide and/or calcium hydroxide (slaked lime) can be added to the fiber material in such a way that at least a portion can associate itself with the water that is contained in the fiber material. The association of the filler material occurs between the fibers, in the hollow fibers and in their walls, creating the following chemical reaction:



The fiber material is then treated with carbon dioxide (CO_2) in the relevant reactor, such that calcium carbonate (CaCO_3) is extensively deposited on the moistened fiber surfaces. This results in the following chemical reaction:



Now, additionally referring to Fig. 5, there is shown a schematic illustration of an exemplary embodiment of a refiner 10 that is equipped with a relating refining slot. Refiner 10 includes an inlet 14 and an outlet 16 for the fibers that are to be refined. A spindle gear unit 18 accommodates a spindle through which the refining slot is adjustable (see slot adjustment 20). Rotor 22 is mounted axially movable on the spindle shaft. The rotor 22 is driven through an axially stationary shaft 24 that is mounted in bearings 26. An oil lubrication 28 is also visible in Fig. 5.

In particular, the following process sequences are feasible:

- Partial refining \rightarrow “Fiber LoadingTM” (loading with a filler) \rightarrow complete refining
- Partial refining \rightarrow “Fiber LoadingTM” (loading with a filler) and partial refining \rightarrow complete refining

While this invention has been described as having a preferred design, the present invention can be further modified within the spirit and scope of this disclosure. This application is therefore intended to cover any variations, uses, or adaptations of the invention using its general principles. Further, this application is intended to cover such departures from the present

disclosure as come within known or customary practice in the art to which this invention pertains and which fall within the limits of the appended claims.

Component Identification

	10	Refiner
	12	Structured surface, toothed or knife filling
5	14	Inlet
	16	Outlet
	18	Spindle gear unit
	20	Slot adjustment
	22	Rotor
10	24	Shaft
	26	Bearing
	28	Oil lubrication
	b	Knife width (bar)
	g	Groove width
15	α	Tooth or knife angle (bar angle)
	β	Sector angle
	γ	Intersecting angle
	θ	Segment angle
	α_s	Knife (bar) angle at the stator
20	α_R	Knife (bar) angle at the rotor

WHAT IS CLAIMED IS:

1. A method of preparing fiber stock for the production of paper or board, comprising the steps of:

supplying fibers in the form of a fiber suspension that has a predetermined solids content;

loading said fibers with a precipitation product, without refining the fiber stock;

5 refining said fibers after said loading step, whereby said refining step at least one of improves a freeness value and alters characteristics of said fibers; and

transporting of the fiber stock in a direction toward a paper machine.

2. The method of claim 1, wherein said predetermined solids content is in the range of approximately 25% to approximately 40%.

3. The method of claim 2, wherein said predetermined solids content is in the range of approximately 30% to approximately 40%.

4. The method of claim 3, wherein said predetermined solids content is in the range of approximately 30% to approximately 35%.

5. The method of claim 1, wherein said precipitation product is a filler.

6. The method of claim 1, further comprising the step of diluting said fiber suspension prior to said refining step.

7. The method of claim 6, wherein said diluting step results in a change of the solids concentration to be in a range of approximately 3% to approximately 7%, said solids concentration defined as the fiber and precipitation product mass, specific to the total volume.

8. The method of claim 7, wherein said solids concentration is in the range of approximately 4% to approximately 6%.

9. The method of claim 8, wherein said solids concentration is in the range of approximately 4.5% to approximately 5.5%.

10. The method of claim 1, wherein said refining step is repeated.

11. The method of claim 10, wherein said predetermined solids content during a first execution of said refining step is different than said predetermined solids content in a subsequent execution of said refining step.

12. The method of claim 10, wherein said predetermined solids content during a first execution of said refining step is the same as said predetermined solids content in a subsequent execution of said refining step.

13. The method of claim 1, further comprising the step of partially refining said fiber suspension prior to said loading step.

14. The method of claim 13, wherein said partially refining step is completed using no more than one half of the total refining energy expended in said partially refining step and said refining step.

15. The method of claim 1, further comprising the step of washing said precipitation product from said fiber suspension after said refining step.

16. The method of claim 1, wherein said fiber suspension is refined in at least one refiner having a refining slot, said refining slot having structured surfaces, said fibers present in said refining slot being refined with an edge load of said surface structures in a range of approximately 0.5 J/m to approximately 5.0 J/m.

17. The method of claim 16, wherein said edge load of said surface structures is in a range of approximately 0.5 J/m to approximately 2.0 J/m.

18. The method of claim 17, wherein said edge load of said surface structures is approximately 1.5 J/m.

19. The method of claim 16, wherein said structured surfaces include a plurality of intersecting angles between knife fillings, said plurality of intersecting angles being in the range of approximately 10° to approximately 80°.

20. The method of claim 19, wherein said plurality of intersecting angles are in the range of approximately 40° to approximately 60°.

21. The method of claim 20, wherein said plurality of intersecting angles are approximately 40° if said fibers are short.

22. The method of claim 21, wherein said plurality of intersecting angles are approximately 60° if said fibers are long.

ABSTRACT OF THE DISCLOSURE

A method for the preparation of fiber stock for the production of paper or cardboard, including the steps of:

- a) Supplying fibers in the form of a suspension that has a predetermined solids content,
- b) Loading of the fibers with a precipitation product, without refining the stock,
- c) Refining of the fibers after completion of the loading process, in order to improve the freeness value and/or to alter the fiber characteristics, and
- d) Transporting of the fiber stock suspension in direction of the paper machine.

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1/3

Fig.1

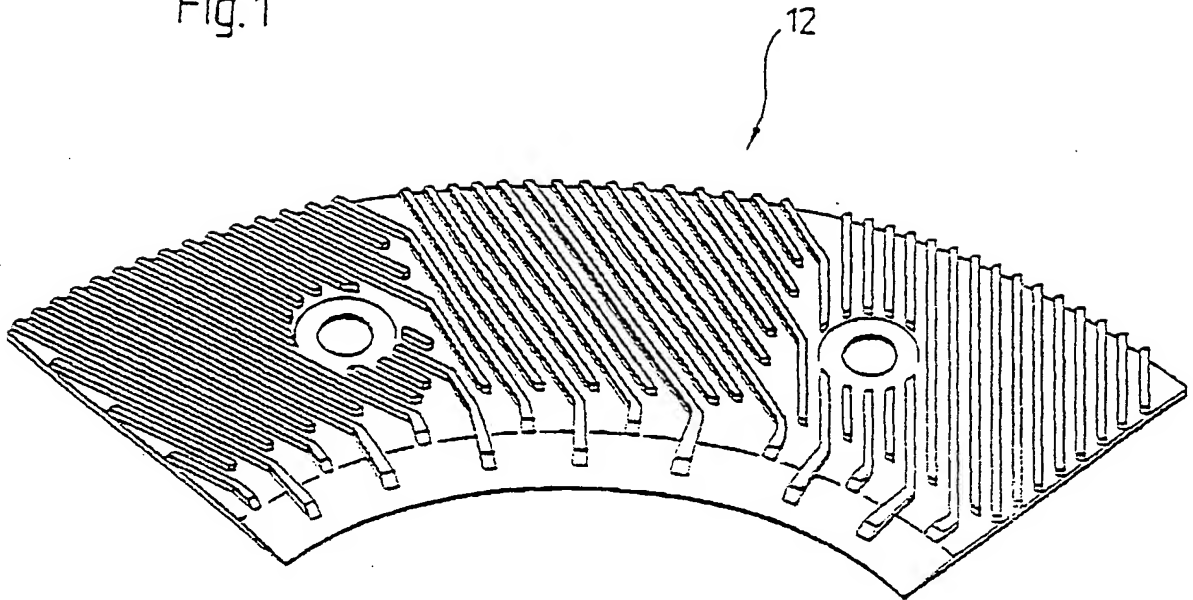
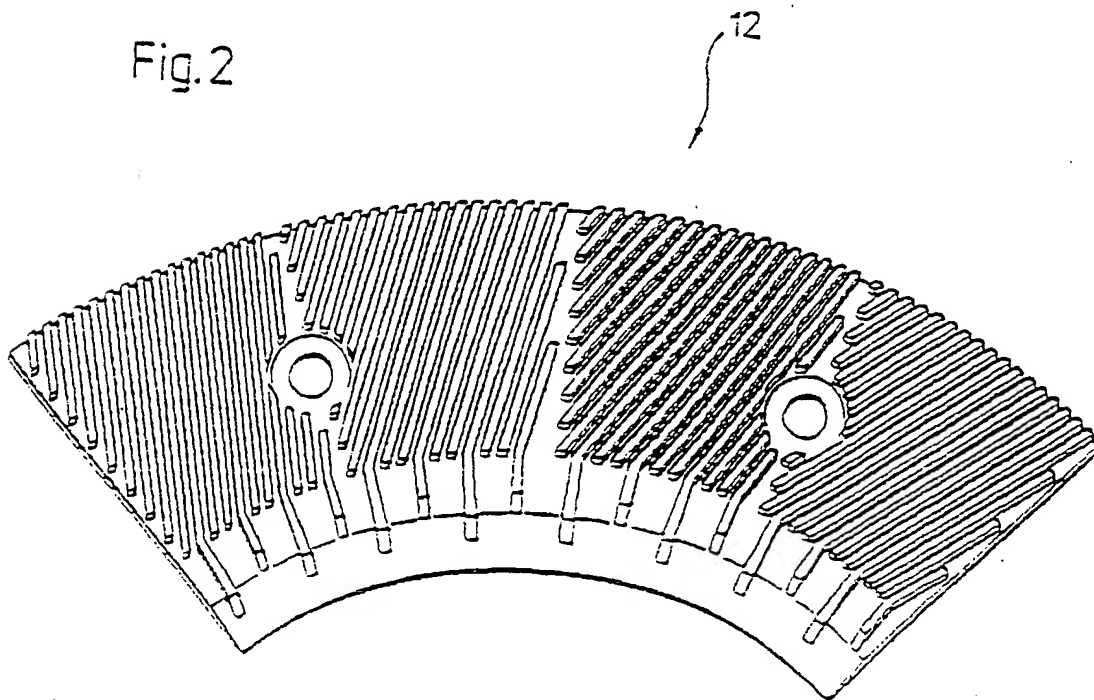
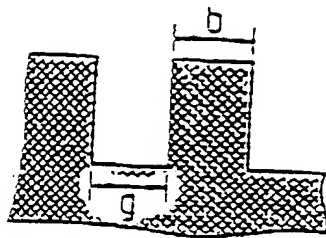


Fig.2



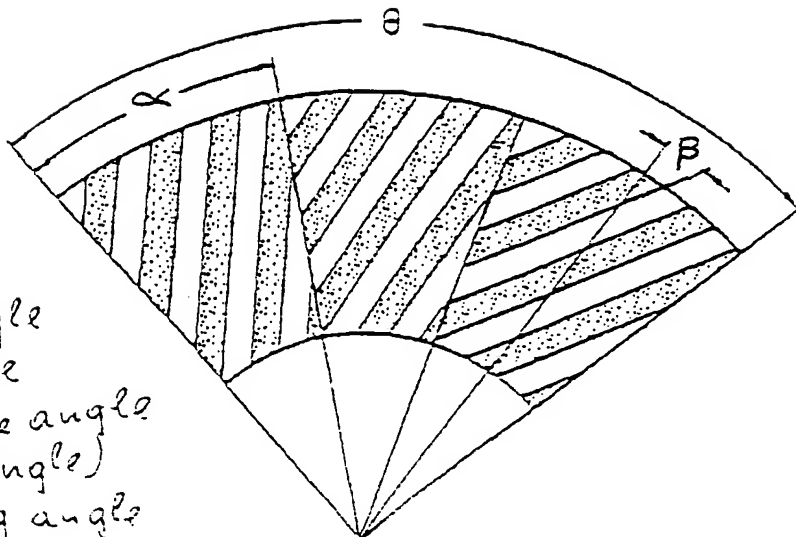
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Fig. 3



b Messerbreite knife width (bar width)
g Nutbreite groove width

Fig. 4

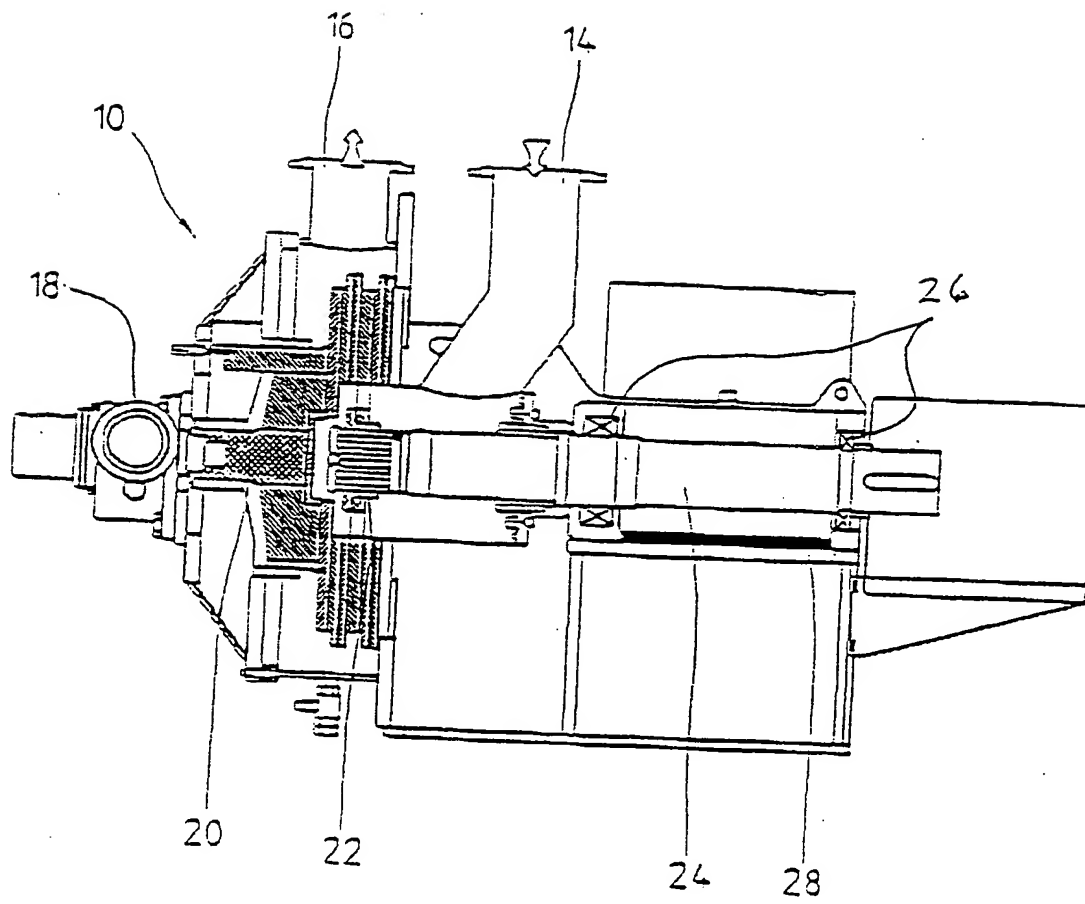


segment angle
sector angle
tooth or knife angle
(bar angle)
inserting angle
 $\alpha_s + \alpha_r$ or
 $2 \times \alpha$ for $\alpha_s = \alpha_r$

ε Segmentwinkel
α Sektorwinkel
β Zahn. bzw. Messer-
winkel (Barangle)
α Schnittwinkel
α $\alpha_s + \alpha_r$ oder
α $2 \times \alpha$ für $\alpha_s = \alpha_r$

3/3

Fig.5





DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD FOR FIBER STOCK PREPARATION

the specification of which:

[] is attached hereto.

[X] was filed on September 26, 2003 as

Application Serial No. 10/672,817

and was amended on _____

(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, '1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, '119, of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)Priority Claimed

101 15 421.6
(Number)

Germany
(Country)

March 29, 2001
(Month/Day/Year Filed)

[X] []
Yes No

(Number)

(Country)

(Month/Day/Year Filed)

[] []
Yes No

I hereby claim the benefit under Title 35, United States Code, '120, of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, '112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, '1.56(a), which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/EP02/01621
(Application Serial No.)

February 15, 2002
(Filing Date)

Pending
(Status)(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under '1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

As the named inventor, I hereby appoint Todd T. Taylor, Reg. No. 36,945; Ronald K. Aust, Reg. No. 36,735; Raymond W. Campbell, Reg. No. 29,902; Max W. Garwood, Reg. No. 47,589; and Stephen D. Horchem, Reg. No. 53,035 of the firm of TAYLOR & AUST, P.C., as attorney(s)/patent agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

SEND CORRESPONDENCE TO:

DIRECT TELEPHONE CALLS TO:

Todd T. Taylor
TAYLOR & AUST, P.C.
142 S. Main St.
P.O. Box 560
Avilla, IN 46710

Todd T. Taylor
Telephone: 260-897-3400
FAX: 260-897-9300

Full name of sole or first inventor: Joerg Rheims

Residence: Tönisvorst, FEDERAL REPUBLIC OF GERMANY

Citizenship: DE

Post Office Address: Willicher Str. 71, D-47918 Tönisvorst, FEDERAL REPUBLIC OF GERMANY

Inventor's Signature:

Date:


DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION (CONTINUED)

Full name of second joint inventor: Oliver Heise

Residence: Menasha, WI

Citizenship: US

Post Office Address: Firelane 13, Menasha, WI 54652

Inventor's Signature: Date: 

Full name of third joint inventor: Klaus Doelle

Residence: Kisslegg, Federal Republic of Germany

Citizenship: DE

Post Office Address: Eichenweg 29, 88353 Kisslegg, Federal Republic of Germany

Inventor's Signature:

Date:

Full name of fourth joint inventor: Ronald Sigl

Residence: Miesbach, FEDERAL REPUBLIC OF GERMANY

Citizenship: DE

Post Office Address: Badstr. 13F. D-83714 Miesbach, FEDERAL REPUBLIC OF GERMANY

Inventor's Signature:

Date:

Full name of fifth joint inventor: Werner Witek

Residence: Appleton, WI

Citizenship: US

Post Office Address: 2882 W. Honeysuckle LN, Appleton, WI 54911

Inventor's Signature:

Date:

ASSIGNMENT

WHEREAS, we, Joerg Rheims, residing at Willicher Str. 71, D-47918 Tönisvorst, FEDERAL REPUBLIC OF GERMANY; Oliver Heise, residing at Firelane 13, Menasha, WI 54652; Klaus Doelle, residing at Eichenweg 29, 88353 Kisslegg, Federal Republic of Germany; Ronald Sigl, residing at Badstr. 13F. D-83714 Miesbach, FEDERAL REPUBLIC OF GERMANY and Werner Witek, residing at 1109 East North Street, Appleton, WI 54911, have invented certain improvements in:

METHOD FOR FIBER STOCK PREPARATION

described and claimed in U.S. Patent Application Serial No. 10/672,817, filed September 26, 2003; and

WHEREAS, Voith Paper Patent GmbH, a corporation organized and existing under the laws of the country of the Federal Republic of Germany, having a place of business at Sankt Pöltener Strasse 43, D-89522 Heidenheim, Federal Republic of Germany, is to acquire the entire right, title and interest in and to said application for Letters Patent;

NOW, THEREFORE, in consideration of the sum of ONE DOLLAR (\$1.00) to us in hand paid, and for other good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, we do hereby assign, sell, transfer and set over unto said Voith Paper Patent GmbH, its successors and assigns, the full, entire and exclusive right, title and interest, for the territory of the United States of America, in and to said invention, as described in the application identified above, and in and to said application and any divisions or continuations or continuations-in-part thereof or substitutes therefor which may be filed, and in and to any patents or reissues, renewals or extensions thereof which may be granted on said application; said application and Letters Patent to be held and enjoyed by said Voith Paper Patent GmbH, and its successors or assigns, to the full end of the term or terms for which said Letters Patent may be granted, as fully and entirely as the same would have been held by us had this assignment not been made.

We hereby authorize and request the Patent and Trademark Office officials in the United States of America to issue any and all of said Letters Patent, when granted to said Voith Paper Patent GmbH, as the assignee of our entire right, title and interest in and to the same, for the sole use and enjoyment of said Voith Paper Patent GmbH, its successors and assigns.

Further, we agree to execute all papers and to give such lawful testimony and to perform such other lawful acts as said Voith Paper Patent GmbH, its successors and assigns may require to enable it or them to procure Letters Patent on said invention or reissues or extensions thereof

in the United States of America, and/or to hold, enforce or convey said Letters Patent, reissues or extensions.

Executed this _____ day of _____, 2004.

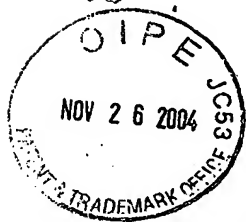
Joerg Rheims

Oliver Heise

Klaus Doelle

Ronald Sigl

Werner Witek



ATTORNEY'S DOCKET NO.: VO10276,US

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

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March 29, 2001

(Month/Day/Year Filed)

[X]

[]

Yes

No

(Number)

(Country)

(Month/Day/Year Filed)

[]

[]

Yes

No

I hereby claim the benefit under Title 35, United States Code, §120, of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a), which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/EP02/01621

(Application Serial No.)

February 15, 2002

(Filing Date)

Pending

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FAX: 260-897-9300

Full name of sole or first inventor: Joerg RheimsResidence: Tönisvorst, FEDERAL REPUBLIC OF GERMANYCitizenship: DEPost Office Address: Willicher Str. 71, D-47918 Tönisvorst, FEDERAL REPUBLIC OF GERMANYInventor's Signature: X [Signature]Date: X 2004-08-16

ATTORNEY'S DOCKET NO. VOI0276.US

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION (CONTINUED)

Full name of second joint inventor: Oliver Heise

Residence: Menasha, WI

Citizenship: US

Post Office Address: Firelane 13, Menasha, WI 54652

Inventor's Signature:

Date:

Full name of third joint inventor: Klaus Doelle

Residence: Kisslegg, Federal Republic of Germany

Citizenship: DE

Post Office Address: Eichenweg 29, 88353 Kisslegg, Federal Republic of Germany

Inventor's Signature: X 

Date: X 2004-08-10

Full name of fourth joint inventor: Ronald Sigl

Residence: Miesbach, FEDERAL REPUBLIC OF GERMANY

Citizenship: DE

Post Office Address: Badstr. 13F, D-83714 Miesbach, FEDERAL REPUBLIC OF GERMANY

Inventor's Signature: X 

Date: X 2004-08-23

Full name of fifth joint inventor: Werner Wittek

Residence: Appleton, WI

Citizenship: US

Post Office Address: 2882 W. Honeysuckle LN, Appleton, WI 54911

Inventor's Signature:

Date:



ATTORNEY'S DOCKET NO. VOI0276.US

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION (CONTINUED)

Full name of second joint inventor: Oliver Heise

Residence: Menasha, WI

Citizenship: US

Post Office Address: Firelane 13, Menasha, WI 54652

Inventor's Signature:

Date:

Full name of third joint inventor: Klaus Doelle

Residence: Kisslegg, Federal Republic of Germany

Citizenship: DE

Post Office Address: Eichenweg 29, 88353 Kisslegg, Federal Republic of Germany

Inventor's Signature:

Date:

Full name of fourth joint inventor: Ronald Sigl

Residence: Miesbach, FEDERAL REPUBLIC OF GERMANY

Citizenship: DE

Post Office Address: Badstr. 13F. D-83714 Miesbach, FEDERAL REPUBLIC OF GERMANY

Inventor's Signature:

Date:

Full name of fifth joint inventor: Werner Witek

Residence: Appleton, WI

Citizenship: US

Post Office Address: 2882 W. Honeysuckle LN, Appleton, WI 54911

Inventor's Signature:

Date:

July 21, 2004